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REMARKS

1. Claim Status

Claims 1, 18, 37, and 57 have been amended. Claims 2, 7-9, 19, 32-34, 38, 40 are canceled. After entering the amendments, claims 1, 3-6, 10-18, 20-31, 35-37, 39, and 41-65 will be pending and under consideration.

2. Claim Amendments

Independent claims 1, 18, 37, and 57 have been amended to more clearly recite the processes for which the Applicants currently seek patent protection. Specifically, the independent claims now relate to a process to "deactivate a halide-containing olefin oligomerization catalyst system and inhibit or limit the decomposition of the deactivated catalyst system . . ." (emphasis added). Additionally, the independent claims now recite that step including "contacting an olefin oligomerization reactor effluent stream which comprises olefin product(s), catalyst system, and heavies with an alcohol" deactivates the catalyst system. Support for these amendments may be found at least at paragraphs 10, 57, 58 and the Examples of the specification as originally filed. Consequently, Applicants believe that no new matter has been introduced by the amendments to independent claims 1, 18, 36, and 57.

3. Examiner Interview

The Applicants thank Patent Examiner McAvoy for agreeing to discuss the case with the Applicants' attorney, Stephen Jenkins, and technical advisor, Steve Herron, on July 9, 2008, during which the pending rejections from the Office Action dated November 5, 2007, were discussed. The following provides the Applicants' summary of the telephonic interview with Examiner McAvoy.

a. A brief description of the nature of any exhibit shown or any demonstration conducted:

No exhibits were used nor was any demonstration conducted.

b. An identification of the claims discussed:

The discussion generally related to independent claim 1.

c. An identification of the specific prior art discussed:

U.S. Patent No. Lashier et al., U.S. Patent 5,689,028 (hereafter "Lashier") and Araki et al., U.S. Patent 5,750,816 (hereafter "Araki") was discussed during the interview.

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- d. An identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner:*

No substantive amendments were proposed or discussed.

- e. A brief identification of the general thrust of the principal arguments present to the examiner:*

Applicants' representatives provided a general description of the claimed process and some inventive aspects of the claimed processes. Specifically, Applicants' representatives explained that the processes relate to olefin oligomerization recovery processes which inhibit or limit decomposition of a deactivated catalyst system. Examiner McAvoy opined that Lashier and Araki relate to deactivating similar catalyst systems using similar methods as the present claims. Applicants' representatives then indicated that there may be a misunderstanding of the pending claims. In particular, Applicants' representatives indicated that the claims are not attempting to merely claim methods for catalyst system deactivation but are rather directed to processes having steps for deactivating a catalyst system and limiting or inhibiting the decomposition of a deactivated catalyst system. Additionally, Applicants' representatives stated that the claimed method(s) may be particularly important in decreasing or eliminating the corrosion of equipment resulting from decomposition of the deactivated catalyst system in distillation towers. In this regard, the applicants directed Examiner McAvoy's attention to Figure 3 showing that deactivated catalyst system decomposition begins to increase significantly as the temperature increases above 190 °C wherein the decomposition of the deactivated catalyst system is shown as an increase in the % octenes as a function of temperature.

Examiner McAvoy opined that Araki may have inherently addressed the problem since Araki's working examples used a similar catalyst system, a similar catalyst system deactivation, and distillation as product recovery step yet did not mention deactivated catalyst system decomposition, deactivated catalyst system decomposition products, or process equipment corrosion. Applicants' representatives first pointed out that the absence of a specific mention of deactivated catalyst decomposition, observation of catalyst system decomposition products, or observation of process equipment corrosion, does not prove such did not occur. Simply stated, the failure to mention deactivated catalyst system decomposition, deactivated catalyst system decomposition products, or equipment corrosion could also indicate that Araki did not recognize or know that there is an issue with the deactivated catalyst system decomposing during product recovery by distillation, and/or that Araki did not monitor the appropriate properties to observe said decomposition. Secondly, Applicants' representatives pointed out that Araki Example I explicitly used a reboiler temperature outside of the claimed range, 230 °C. Thirdly, in relation to Araki not mentioning or

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observing process equipment corrosion, Applicants' representatives pointed out that Araki's examples were short-term experiments. Visual observation of process equipment corrosion may not easily be observed in short-term experiments. Corrosion would be more noticeable from long-term exposure of the equipment to corrosive compounds since the effects on equipment are cumulative. Applicants also noted that since production plants are designed for decades of operation, the solutions represented by the pending claims could significantly impact the economics of a processing plant via extending the useful lifetime of the equipment that may be exposed to corrosive compounds.

f. A general indication of any other pertinent matters discussed:

No other pertinent matters were discussed.

g. General results or outcome of the interview:

Applicants' representatives offered, in light of the potential misunderstanding, to file an RCE so that Examiner McAvoy could consider the aforementioned remarks, reconsider that application of cited art, and reconsider the patentability of the pending claims.

4. 35 U.S.C. § 103 Claim Rejections

Claims 1, 3-6, 10-18, 20-31, 35-37, 39, 41-65 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Lashier et al., U.S. Patent 5,689,028 (hereafter "Lashier"), Araki et al., U.S. Patent 5,750,816 (hereafter "Araki"), and Kreischer et al., U.S. Patent 6,380,451 (hereafter "Kreischer"), considered separately. Specifically, the Office Action dated November 5, 2007 (hereafter "Office Action"), restated the obviousness rejections of the Office Action dated March 27, 2007, that processes of Lashier, Araki, and Kreischer appear "indistinguishable from the claimed processes." The Office Action further states that the arguments presented in the Office Action Response dated August 27, 2007, are "are not deemed to be persuasive because" Lashier, Araki, or Kreischer "discloses essentially the same step that has been added to the independent claims." The Applicants respectfully traverse these claim rejections.

a. 35 U.S.C. § 103 Claim Rejections – Claims 1, 18, 37, 57

Independent claims 1, 18, 37, and 57 each recite that they relate to a process to "deactivate a halide-containing olefin oligomerization catalyst system and inhibit or limit the decomposition of the deactivated catalyst system during recovery of an olefin oligomerization product" (emphasis added) wherein the recovery of the olefin oligomerization product comprises "a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C." Applicants submit that Lashier, Araki, or Kreischer do not disclose the feature that "material passed through the reboiler is

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maintained below about 190 °C" and that the Office Action freely concedes that Lashier, Araki, or Kreischer "do not set forth a reboiler distillation temperature of below about 190 °C." See pages 3, 5, and 7 of the Office Action.

As noted in the Examiner Interview Summary, Applicants have discovered that "the separation of step (b) comprises a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C" has an effect in the processing of the olefin oligomerization product. Figure 3 shows that the deactivated catalyst systems decomposition begins to increase significantly as the temperature increases above 190 °C via the observation an increase in the amount of octenes produced; deactivated catalyst system decomposition may be detected by observing the production of octenes (see paragraph 60 of the detailed description). Consequently, the separation step of having "a distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C" has a material effect on the olefin oligomerization recovery process.

In contrast, Lashier, Araki, and Kreischer provide no mention of deactivated catalyst system decomposition or the importance of maintaining material passed through the reboiler below about 190 °C and Lashier and Kreischer do not provide any specific criteria to be applied to distillation of the olefin oligomerization product. However, Araki working examples 1 and 3 provide for a heater temperature of 230 °C and an evaporator temperature of 200 °C, respectfully, during the distillation/evaporation of the oligomerization product. These Araki recovery temperatures exceed the temperature limitation recited in independent claims 1, 18, 37, and 57. Consequently, since a reference must be considered in its entirety, these examples indicate that Araki teaches away from the claimed invention or alternatively that Araki does not teach each and every limitation of the pending independent claims.

Furthermore, the Office action attempts to cure the deficiency of reciting "material passed through the reboiler" temperature within Lashier, Araki, and Kreischer and minimize the inventive aspect(s) of the limitation by stating that Lashier, Araki, Kreischer teach "that any reaction conditions which can affect the above-mentioned steps can be used" and as such it is of the "position that the method set forth in" Lashier, Araki, or Kreischer "clearly includes the newly added step (b) of the claims" and the "position that the temperature of separation into at least one product stream containing the olefin oligomerization product and at least one heavies stream in the method of" Lashier, Araki, or Kreischer "is expected to be the same or similar to applicants' claimed temperature" See page 3, page 5, and page 7 of the Office Action. Applicants respectfully submit the temperature of material passed through a reboiler of a distillation tower relates to olefin oligomerization product isolation, not the reaction conditions for olefin oligomerization product formation, and that the reboiler temperature is a feature of product isolation and

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not a reaction condition. As such, statements within Lashier, Araki, or Kreischer relating to reaction conditions do nothing to cure deficiencies admitted as missing from Lashier, Araki, and Kreischer relating to a "distillation comprising a reboiler and material passed through the reboiler is maintained below about 190 °C." Consequently for this reason, independent claims 1, 18, 37, and 57 are not obvious in light of Lashier, Araki, and Kreischer.

For the above-cited reasons, Applicants respectfully submit that the Office Action has failed to present a prima facie case of obviousness in relation to the pending independent claims. Consequently, independent claims 1, 18, 37, and 57, and any claim which depends therefrom, claims 3-6, 10-17, 20-31, 35-36, 39, 41-56, and 58-65, are allowable over the cited references. Applicants respectfully request that the 35 U.S.C. § 103 rejections of the pending claims in view of Lashier, Araki, and Kreischer considered separately be withdrawn.

b. 35 U.S.C. § 103 Claim Rejections – Claim 18

Applicants note that the Office Action provided no rebuttal argument in relation to the failure of Lashier, Araki, and Kreischer to suggest or teach the claim feature in Claim 18 reciting "minimizing water content in an alcohol." Applicants kindly request review, comment, and reconsideration of claim 18 based upon the patentability arguments presented in the Office Action Response dated August 27, 2007.

In relation to independent claim 18, the process of claim 18 includes a step of "minimizing water content in an alcohol." Lashier, Araki, and/or Kreischer do not teach or suggest "minimizing water content in an alcohol" used to form "an intermediate stream by contacting an olefin oligomerization reactor effluent stream which comprises olefin product(s), catalyst system, and heavies with the alcohol." Normally, one would not consider the presence of water in an alcohol used to deactivate the catalyst system to be detrimental in a catalyst deactivation and oligomerization recovery.

However, Applicants would like to draw attention to Figure 3. This figure shows that the presence of water exacerbates deactivated catalyst decomposition by a further lowering of the temperature at which the deactivated catalyst system begins to significantly decompose. Consequently, the step of minimizing the water content of the alcohol used to deactivate the catalyst system has a material effect on the olefin oligomerization recovery process. As such, independent claim 18 and claims 19-21, 24, 25, 27-36, 51, 53, and 56, which depend on claim 18, are allowable over the cited references. Applicants respectfully request that the rejection of claims 18, 20-21, 24, 25, 27-31, 35-36, 51, 53, and 56 be withdrawn.

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5. Final Remarks

In commenting upon the cited references and the pending claims, certain details of distinction between the cited references and the pending claims have been mentioned to facilitate a better understanding of the claimed invention. The unclaimed distinctions are not intended to create any implied limitations in the claims. Additionally, not all distinctions between the cited references and Applicants' present invention have been presented by the Applicants. Applicants reserve the right to submit additional evidence demonstrating that Applicants' invention is novel and nonobvious in view of the cited references.


The foregoing remarks are intended to assist the Examiner in re-examining the application and, in the course of explanation, may employ shortened, more specific, or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims. The actual claim language should be considered in each case. Furthermore, the remarks only represent certain advantageous features and differences between the pending claims and the cited references that Applicants' attorney chooses to mention at this time. The remarks should not be considered exhaustive to all features which render the invention patentable.

Consideration of the amended claims is respectfully requested. In view of the foregoing remarks and the Office Action cited references, Applicants respectfully submit that the amended claims under consideration are in condition for allowance. The Examiner is invited to contact the undersigned patent attorney at (832) 813-4561 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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